

## 12.0 AOC 16 – OLD BURN PIT

### 12.1 LOCATION OF STUDY AREA

The Old Burn Pit comprises approximately 0.03 acres within the Cantonment Area at the Fort McClellan, Alabama Army Installation (Fig. 1). Because of the difficulty in determining the precise location of a study area this small, the study area boundary was devised by adding a large, irregularly shaped buffer including approximately 1.3 acres surrounding the Old Burn Pit site boundary.

### 12.2 AERIAL PHOTOGRAPH QUALITY ISSUES

A few photograph quality issues were encountered during photograph interpretation. They were corrected as follows:

- X **Quality** - In many areas of the photographs, the dynamic range of brightness values was insufficient to distinguish land cover classes. Due to extreme brightness (almost white), ground cover such as grass, bare soil, trails, and roads could not be differentiated. At other locations, extremely dark (nearly black) areas made it difficult to delineate grass from forested areas. Where appropriate, the problem areas of the photographs were subset and image enhancement techniques were applied. Simple adjustments to the brightness and contrast, or in more severe cases, performing a histogram equalization in the range of the lookup table was performed on the specific area where interpretation was difficult. Photographic interpretation could not be conducted on the 1937 photographs due to the poor quality of the photographs.
- X **Rectification** - Although second- and third-order transformations were used in the rectification of the digital photographs, several rectified photographs contained too much error within the Old Burn Pit to accurately digitize land use/cover polygons. Factors contributing to the error included: (1) insufficient ground control points (GCPs) due to pronounced changes in land cover between years, (2) photographic distortion (location of the site in relation to the center of the photograph and the angle of the camera/aircraft when the photograph was acquired), and (3) terrain distortion (a single photograph may cover a large geographic area of varying elevations even though the site of interest may have little topographic relief). To improve the photographic registration of the study area, the Old Burn Pit was subset from the rectified digital photographs in question and the newly-created image files were rectified separately.

### 12.3 FINDINGS

Complete photographic coverage of the study area was available for eight years of photographic coverage from 1937 to 1994. A total of 20 anomalies were identified in the year-by-year land cover analysis (Fig. 2). All anomalies were inspected to ascertain the cause of each anomaly. All anomalies were resolved. Anomalies potentially associated with waste disposal or chemical training activities were determined to be of potential concern and should be assessed by the USAESCH. Of the 20 anomalies identified, 16 were caused by pre-existing and former roads, pre-existing buildings and removal of buildings, the clearing of trees, and other cleared areas associated with the

construction of a building complex. The remaining four anomalies were the result of the clearing of trees and/or groundcover; these anomalies are considered to be of potential concern.

**1937.** The 1937 photographs were not interpreted because of the poor quality of the available photographs (see Fig. 3a). However, no pre-existing anomalous areas were identified during a visual inspection of the photographs.

**1937 to 1940.** Since the 1937 photographs were not interpreted, the 1937 land use/cover was not available. No anomalies were identified during the land cover analysis for 1940 (see Fig. 3b).

**1940 to 1944.** Seven anomalies were identified during the land cover analysis for the years 1940 and 1944 (see Table 1 and Fig. 3c). The seven anomalies were the result of buildings, a road, and the clearing of trees and/or vegetation associated with the construction of a building complex. There are no anomalies of potential concern.

**1944 to 1954.** Eight anomalies were identified during the land cover change analysis for the years 1944 and 1954 (see Table 1 and Fig. 3d). The eight anomalies were the result of the removal of buildings, former roads, and former cleared areas. There are no anomalies of potential concern.

**1954 to 1961.** Two anomalies were identified during the land cover change analysis for the years 1954 and 1961 (see Table 1 and Fig. 3e). The two anomalies are of potential concern and were the result of the clearing of trees (1 anomaly) and another cleared area (1 anomaly).

**1961 to 1969.** One anomaly was identified during the land cover change analysis for the years 1961 and 1969 (see Table 1 and Fig. 3f). The anomaly is of potential concern and was the result of the clearing of trees (1 anomaly).

**1969 to 1982.** One anomaly was identified during the land cover change analysis for the years 1969 and 1982 (see Table 1 and Fig. 3g). The anomaly is of potential concern and was the result of the clearing of trees (1 anomaly).

**1982 to 1994.** One anomaly was identified during the land cover change analysis for the years 1982 and 1994 (see Table 1 and Fig. 3h). The anomaly was the result of a new road. There are no anomalies of potential concern.

Figure 1



Figure 2



**Table 1. Old Burn Pit - Anomaly Resolution**

<b>Of Potential Concern</b>	<b>Anomaly #</b>	<b>Year of Change</b>	<b>Discussion</b>	<b>Related Anomalies<sup>1</sup></b>
	1	1944	Trees cleared (associated with building complex)	None
	2	1944	Road (associated with building complex)	8 - 10
	3	1944	Trees cleared (associated with building complex)	None
	4	1944	Building	12, 13
	5	1944	Cleared area (parking lot-associated with building complex)	11, 14
	6	1944	Building	15
	7	1944	Trees cleared (associated with building complex)	None
	8	1954	Former road (first visible 1944)	2, 9, 10
	9	1954	Former road (first visible 1944)	2, 8, 10
	10	1954	Former road (first visible 1944)	2, 8, 9
	11	1954	Former cleared area (first visible 1944)	5
	12	1954	Building removed (first visible 1944)	4, 13
	13	1954	Building removed (first visible 1944)	4, 12
	14	1954	Former cleared area; maintained (first visible 1944)	5
	15	1954	Building removed (first visible 1944)	6
Yes	16	1961	Trees cleared	None
Yes	17	1961	Cleared area	None
Yes	18	1969	Trees cleared	None
Yes	19	1982	Trees cleared	None
	20	1994	Road	None

<sup>1</sup> Related anomalies refer to anomalies which are carried forward from year to year (e.g., a trail) or anomalies which change (e.g., the extension or widening of a trail or cleared area).

## 12.4 ANOMALIES OF POTENTIAL CONCERN

Twenty anomalies were identified during the photographic interpretation of the Old Burn Pit. All anomalies have been resolved and four are considered to be of potential concern. To facilitate anomaly tracking, the anomalies of potential concern were mapped using the anomaly tracking number assigned in the year-by-year analysis (see Table 2 and Fig. 4). Table 2 provides information for each anomaly of potential concern, including the anomaly tracking number, coordinates for the approximate center of the anomaly (coordinates provided in Alabama State Plane East, North American Datum [NAD] 83), the year the change occurred, and the reason for the anomaly.

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Fig. 3a



Fig. 3b



Fig. 3c



Fig. 3d





Fig. 3e



Fig. 3f



Fig. 3g



Fig. 3h





**Table 2. Old Burn Pit - Anomalies of Concern**

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
16	667843.86640	1166085.64463	1961	Trees were cleared from this area between 1954 and 1961. By 1969, the area had revegetated.
17	667927.76784	1166053.48241	1961	This area was cleared between 1954 and 1961. By 1969, the area had revegetated.
18	667806.80993	1166262.53684	1969	Trees were cleared from this very small area between 1961 and 1969. By 1982, the area had revegetated.
19	667852.95572	1165978.67029	1982	Trees were cleared from this area between 1969 and 1982. By 1994, the area had revegetated.

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Fig. 4